

WHAT IS CLAIMED IS:

1. A total communication system comprising a first communication device which can communicate with another first communication device by using a first communication system and a second communication device which can communicate with another second communication device by using a second communication systems,

said first communication device comprising:

a first communication means for communicating with said another first communication device by using said first communication system;

a second communication means for communicating with said second communication device located in close proximity to said first communication device by using a third communication system; and

a first control means for controlling said first and second communication means;

said second communication device comprising:

a third communication means for communicating with said another second communication device by using said second communication system;

a forth communication means for communicating with said first communication device located in close proximity to said second communication device by using

said third communication system; and

a second control means for controlling said third and forth communication means;

said first control means of said first communication device controlling said first and second communication means;

wherein said first communication device receives address information of said second communication device from said second communication device located in close proximity by using said third communication system;

said first communication device transmits, using said first communication system, said address information received from said second communication device to said another first communication device communicated with said first communication device by using said first communication system; and

said first communication device receives said address information of said another second communication device from said another first communication device by using said first communication system,

whereby said second communication device is communicated with said another second communication device by using said second communication system.

2. A total communication system according to claim 1,

further comprising a communication control apparatus for controlling implementation of connection between said second communication device and said another second communication device by using said second communication system.

3. A total communication system according to claim 2, wherein: said first communication device further has a first storage means for storing first identification information thereof;

said second communication device further has a second storage means for storing second identification information thereof;

said second communication device transmits said second identification information to said first communication device by using said third communication system;

said first communication device transmits said first identification information stored in said first storage means and said second identification information received to said another first communication device by using said first communication system; and

said another first communication device transmits said first identification information and said second identification information received from said first

communication device to said another second communication device by using said third communication system;

whereby said second communication device authenticates said another second communication device and said second communication device authenticates said second communication device.

4. A total communication system according to claim 2, wherein said communication control apparatus comprises an accounting means for carrying out accounting processing for said first communication device.

5. A total communication system according to claim 1, wherein said first, second and third communication systems are each a duplex communication system.

6. A total communication system according to claim 5, wherein said first communication system is a communication system using an electric wave.

7. A total communication system according to claim 5, wherein said second communication system is a communication system of a connectionless type.

8. A total communication system according to claim 5, wherein said second communication system is a communication system of a connection type.

9. A total communication system according to claim 5, wherein said third communication system is a

communication system using an infrared ray.

10. A total communication system according to claim 1, wherein said first communication device is a portable communication device.

11. A total communication system according to claim 1, wherein said second communication device further comprises a video camera for picking up an image of an object and for generating image data on the basis of said image and said third communication means exchanges said image data with said third communication means employed in said another second communication device.

12. A total communication system according to claim 11, wherein said second communication device further comprises a display unit for displaying image data received by said third communication means employed in said second communication device from said third communication means employed in said another second communication device.

13. A total communication system according to claim 1, wherein said first communication means employed in said first communication device exchanges audio information with said first communication means employed in said another first communication device in addition to said address information.

14. A first communication device employed in a total communication system comprising a first communication device which can communicate with another first communication device by using a first communication system and said second communication device which can communicate with another second communication device by using a second communication system, said first communication device comprising:

a first communication means for communicating with said another first communication device by using said first communication system;

a second communication means for communicating with said second communication device located in close proximity to said first communication device by using a third communication system; and

a control means for controlling said first communication means and said second communication means to receive address information of said second communication device from said second communication device located in close proximity to said first communication device by using said third communication system, to transmit the address information received from said second communication devices to said another first communication device communicated with said first

communication device by using said first communication system, and to receive address information of said another second communication device from said another first communication device by using said first communication system.

15. A first communication device according to claim 14, further comprising a first storage means for storing first identification information for identifying said first communication device.

16. A first communication device according to claim 15, wherein said first communication means transmits said first identification information stored in said storage means and second identification information received from said second communication device to said another first communication device by using said first communication system.

17. A first communication device according to claim 14, wherein said first, second and third communication systems are each a duplex communication system.

18. A first communication device according to claim 17, wherein said first communication system is a communication system using an electric wave.

19. A first communication device according to claim 17, wherein said second communication system is a

communication system of a connectionless type.

20. A first communication device according to claim 17, wherein said second communication system is a communication system of a connection type.

21. A first communication device according to claim 17, wherein said third communication system is a communication system using an infrared ray.

22. A first communication device according to claim 14, wherein said first communication device is a portable communication device.

23. A first communication device according to claim 14, wherein said first communication means employed in said first communication device exchanges audio information with said first communication means employed in said another first communication device in addition to said address information.

24. A second communication device employed in a total communication system comprising a first communication device which can communicate with another first communication device by using a first communication system and said second communication device which can communicate with another second communication device by using a second communication system, said second communication device comprising:



a third communication means for communicating with said another second communication device by using said second communication system;

a forth communication means for communicating with said first communication device located in close proximity to said second communication device by using a third communication system; and

a control means for controlling said forth communication means to transmit address information of said second communication device to said first communication device and for controlling said third communication means to receive address information of said another first communication device and address information of said another second communication device from said another second communication device.

25. A second communication device according to claim 24, further comprising a second storage means for storing second identification information for identifying said second communication device.

26. A second communication device according to claim 25, wherein said third communication means transmits said second identification information stored in said storage means to said another second communication device by using said second communication system.

27. A second communication device according to claim 24, wherein said first, second and third communication systems are each a duplex communication system.

28. A second communication device according to claim 27, wherein said first communication system is a communication system using an electric wave.

29. A second communication device according to claim 27, wherein said second communication system is a communication system of a connectionless type.

30. A second communication device according to claim 27, wherein said second communication system is a communication system of a connection type.

31. A second communication device according to claim 27, wherein said third communication system is a communication system using an infrared ray.

32. A second communication device according to claim 24, further comprising a video camera for picking up an image of an object and for generating image data on the basis of said image and said third communication means exchanges said image data with said third communication means employed in said another second communication device.

33. A communication method using a total communication system including a first communication device which can

communicate with another first communication device by using a first communication system and a second communication device which can communicate with another second communication device by using a second communication system, said communication method comprising the steps of:

at said first communication device, receiving address information of said second communication device from said second communication device located in close proximity to said first communication device to said first communication device by using a third communication system;

at said first communication device, transmitting said address information received from said second communication device from said first communication device by using said first communication system to said another first communication device already connected to said first communication device by using said first communication system; and

at said first communication device, receiving the address information of said second communication device transmitted from said another first communication device, by using said third communication system.

34. A communication method according to claim 33,

further comprising the steps of:

transmitting second identification information of said second communication device from said second communication device to said first communication device by using said third communication system;

transmitting said second identification information received from said second communication device and first identification information of said first communication device from said first communication device to said another first communication device by using said first communication system;

transmitting said second identification information and said first identification information received from said first communication means from said another first communication means to said another second communication means by using said third communication system;

authenticating said second communication device by said another second communication device; and

authenticating said another second communication device by said second communication device.